

NEW SOUTHERN RANGE LIMIT FOR *POLYRHACHIS YORKANA* FOREL (HYMENOPTERA: FORMICIDAE), WITH PROVISIONAL DATA ON CASTES

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Abstract

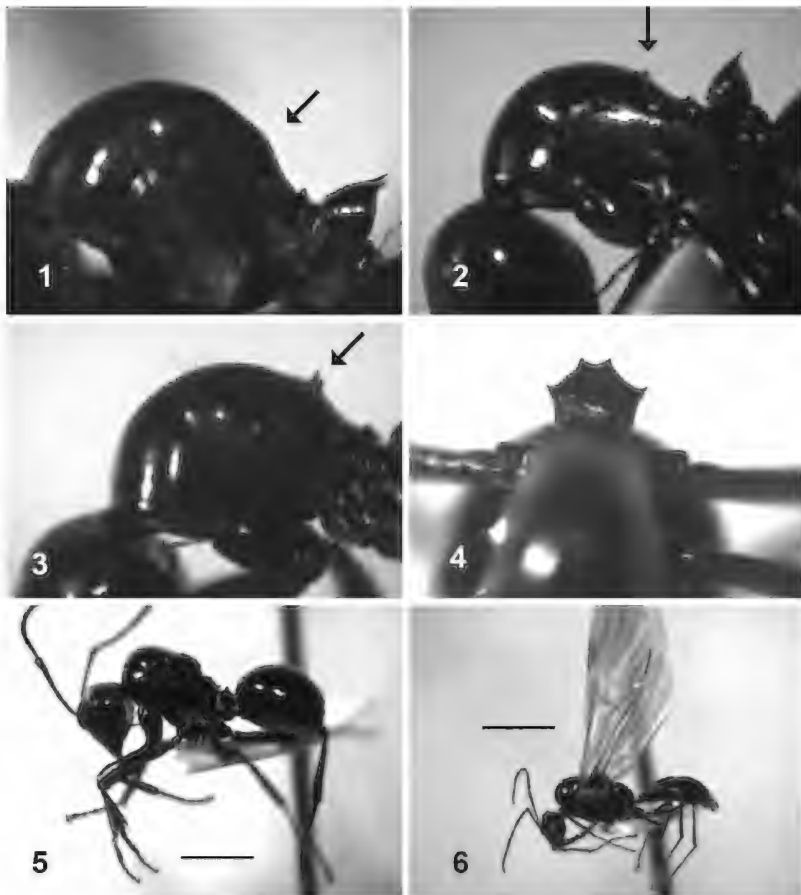
The southernmost range limit of the Australian weaver ant *Polyrhachis yorkana* Forel, 1915 is here extended from its previously recorded location in the Queensland wet tropics to Townsville in the dry tropics. Six *P. yorkana* nests provided provisional data on relative numbers of the castes.

Discussion

The Australian arboreal weaver ant *Polyrhachis (Cyrtomyrma) yorkana* Forel, 1915 is largely confined to lowland rainforest in Queensland's wet tropics but its range extends into Cape York Peninsula (Kohout 2006). The southernmost point of its recorded range is Russel River, Bellenden Ker landing (17.273S, 145.948E) (Kohout 2000), 240 km north of Townsville (dry tropics).

On 16 October and 18 December 2014, I found one and two nests respectively of this species in a suburban garden in Mundingburra, Townsville (19.30S, 146.79E). Two of these nests were contained within small pieces of detached, curled bark. Only one of the three was queenright and this nest had a disproportionate number (83) of males. On 9 August 2015, I found two more queenless nests in abandoned nests of the green weaver ant *Oecophylla smaragdina* Fabricius, 1775 in a fig tree in a suburban garden in West End, Townsville (19.27S, 146.79E). On 14 October 2015, a sixth queenless nest was collected from Lou Litster Park in the Townsville suburb of Hermit Park (19.29S, 146.79E). This nest had also been constructed within an existing arthropod nest, in this case that of the social spider *Phryganoporus candidus* (L. Koch, 1872), which still contained two resident spiders. The apparent usurpation could have arisen out of a prior scavenging role tentatively assigned to species of ants associating with *P. candidus* (Downes 1994). A lone worker was also collected on 26 February 2015, from a garden in the adjacent suburb of Annandale (19.31S, 146.79E). In all cases, *P. yorkana* was nesting in close proximity to colonies of *Polyrhachis australis* Mayr, 1870 (typically in the same tree).

The worker caste of *P. yorkana* is illustrated in Figs 1-4, where the variation in propodeal spine length is evident; also the subequal sizes of the dorsal and lateral petiolar spines, a character separating this species from *P. australis* in which the lateral spines are distinctly longer than the dorsal ones. The alitrunk lengths of the 23 workers from the nest collected on 16 October 2014 were measured, giving a mean \pm standard deviation of 1.59 ± 0.068 mm. Figs 5-6 depict the queen and a male.



Figs 1-6. *Polyrhachis yorkana*: (1-3) workers showing the characteristic variation in the length of the propodeal spines (arrowed); (4) worker showing the petiole with its subequal dorsal and lateral spines; (5) queen; (6) male. Scale bars (Figs 5-6) = 2 mm.

Details of the nests' contents are given in Table 1. The limited evidence is consistent with a seasonal pattern of male production similar to that found in *P. australis*, in which male production starts to increase in October and peaks in November (Downes 2015). The presence of 23 and 152 males respectively, together with relatively large numbers of brood, in two of the five queenless nests could be explained by the loss, for unknown reasons, of their recently resident queen(s). Alternatively, those nests may have been outposts of a single queen domiciled in another nest, a colony structure exemplified in

extreme fashion by green weaver ants of the genus *Oecophylla* Smith (e.g. Hölldobler 1979). *P. yorkana*'s five-to-one (83%) queenless nest proportion contrasts with corresponding data for other *Polyrhachis* (*Cyrtomyrma*) Forel weaver ants in the same region: 32% (12 of 37 nests) for *Polyrhachis robsoni* Kohout, 2006 (van Zweden *et al.* 2007) and 14% (25 of 181 nests) for *P. australis* (Downes 2015). However, the sample size is too small for reliable speculation about polydomy and colony structure, *i.e.* whether a single queen might serve several nests.

Table 1. Nest volume, nest height and caste breakdown for six *Polyrhachis yorkana* nests: A = 16.x.2014; B = 18.xii.2014(1); C = 18.xii.2014(2); D = 9.viii.2015(1); E = 9.viii.2015(2); F = 14.x.2015; NR = not recorded.

	A	B	C	D	E	F
Volume (cm ³)	4	9	5	NR	36	NR
Height (m)	0.8	0.3	NR	2.4	2.5	1.4
Eggs	1	NR	10	NR	4	NR
Larvae	19	NR	14	NR	25	NR
Male pupae	0	15	15	0	0	37
Queen pupae	0	0	0	0	0	0
Worker pupae	0	3	4	2	14	0
Males	0	83	23	0	0	152
Queens	0	1	0	0	0	0
Workers	23	58	32	53	48	158

Voucher specimens have been deposited in the collection of the Queensland Museum, Brisbane. The identification was made using Kohout's (2006) key.

Acknowledgements

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